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ABSTRACT OF THE DISCLOSURE

In one aspect, the invention encompasses a method of packing and unpacking a column chamber. A mixture of a fluid and a matrix material are introduced through a column chamber inlet so that the matrix material is packed within a column chamber to form a packed column. After the packing, the matrix material is unpacked from the column chamber without moving the column chamber. More specifically, the column chamber having the column chamber inlet or first port for receiving the mixture further has an outlet port and an actuator port. The outlet port is partially closed for capturing the matrix material and permitting the fluid to flow therepast by rotating relative one to the other of a rod placed in the actuator port. Further rotation relative one to the other of the rod and the column chamber opens the outlet and permits the matrix material and the fluid to flow therethrough thereby unpacking the matrix material from the column chamber. In another aspect, the invention encompasses a method of purifying a component of a sample. A column chamber having an inlet end, an outlet end and an actuator end is provided. Flow of matrix material is obstructed by a rod with a binary end inserted in the actuator end. A suspension of the first fluid and the matrix material is flowed into the column chamber to form a packed column of the matrix material within the column chamber. The matrix material is configured to selectively retain a component of the sample. The sample is flowed through the packed column and past the rod to separate the component from the rest of the sample. The rod or the column chamber is rotated with respect to the other to open the outlet end and to remove the matrix material

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3 from the column chamber. In yet another aspect, the invention encompasses a system for
4 column-based separations. The system comprises a fluid passageway containing a
5 column chamber and a flow path in fluid communication with the column chamber. The
6 flow path is partially obstructed by a rod. The flow path extends through the column
7 chamber and through the outlet end. The flow path is configured to form a packed
8 column within the column chamber when a suspension of the fluid and the column matrix
9 material is flowed along the flow path.
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